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Effect of Diet On Growth Performance And Carcass Composition In Different Strains of Tilapia

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ABBREVIATION

FCR- feed conversion ratio

SGR- specific growth rate

DWG- daily weight gain

ME- metabolizable energy

NFE- nitrogen-free-extract

AOAC- Association of Official Analytical Chemist

PKC- Palm kernel cake

O.m- Oreochromis mossambicus

O.np- Oreochromis niloticus philippines

O.nl- Oreochromis niloticus local

ANOVA- analysis of variance

UF- university feed

CF- commercial feed

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ABSTRACT

Effect of diet on growth performance in three strains of Tilapia, *O. niloticus* local, *O. niloticus* philippines and *O. mossambicus* was observed from 10 to 32 weeks of age at the University of Malaya farm.

This experiment involved the effect of two different diets, University Feed (UF) and Commercial Feed (CF) on growth and other traits. The UF was prepared with ingredients such as rice bran, corn, PKC, fish meal and mollasses. CF was manufactured by Dinding Soya and Multifeeds Sdn. Bhd, where the feed ingredients used by the company was not known. The company provides only the gross proximate composition of the feed.

UF was analysed for different constituents in the feed and was found to contain 20.03% crude protein, 9.6% moisture, 7.7% fat, 7.6% ash and the ratio of ME Kcal and % protein as 150. CF was known to have 20% crude protein, 4% fat, 8% ash, 11% moisture and ME Kcal / % protein = 150. The two rations were isocaloric and had the same caloric-protein ratio.

An analysis of variance (ANOVA) was done to estimate differences between strains, diets and strain x diet interaction. Statistical analysis using SPSS was done.

Results showed that the UF was better than CF, with regard to growth and conformation. Mean values with standard error with UF were attained as follows: highest body weight of 92.85 ± 4.86 g for *O.niloticus* local and lowest body weight of 72.94 ± 1.84 g for *O.mossambicus* at the age of 32 weeks. With CF, *O.niloticus* philippines showed highest weight of 69.82 ± 1.08 g and lowest weight of 45.35 ± 5.34 g was seen for *O.mossambicus*. Feed consumption and feed conversion ratio of strains fed with UF were also found to be better than with CF.

Growth performance of three strains (*O.niloticus* local, *O.niloticus* philippines and *O.mossambicus*) during the period till 32 weeks showed both *O.niloticus* strain were better than *O.mossambicus* with UF as well as CF.

Interaction effect of diet x strain was significant for body weight, body conformation traits and feed consumption but not for feed conversion ratio.

Carcass composition was measured separately for males and females from three strains in tilapia and the results showed that *O.niloticus* strains were better than *O.mossambicus* for most carcass traits.

ABSTRAK

Penyelidikan tentang kesan pemakanan keatas pencapaian pertumbuhan 3 strain Tilapia, *O.mossambicus*, *O.niloticus* philippines dan *O.niloticus* local dalam masa umur 10 hingga 32 minggu tela dijalankan di Ladang University Malaya.

Penyelidikan ini dilakukan dengan menggunakan dua jenis pemakanan. Pemakanan yang dimaksud adalah makanan yang dibuat di University Malaya (UF) dan yang berasal dari kilang pemakanan komersial (CF) yang dikeluarkan oleh Dinding Soya Sdn. Bhd, dimana bahan makanan yang digunakan tidak diketahui. Hanya komposisi proximat untuk makmal syarikat diberikan kepada pelanggan. Bahan makanan UF dibuat dari dedak padi (rice bran), jagung (corn), hampas minyak kelapa sawit (PKC), hampas gula tebu (molasses) dan tepung ikan (fish meal).

Kandungan bahan makanan UF juga telah diuji dengan menggunakan kaedah AOAC, di Jabatan Haiwan Petaling Jaya (Department of Veterinary Services, Petaling Jaya) dan telah menghasilkan kandungan protein sebanyak 20.03%, kandungan lemak 7.7%, moisture (kandungan air) sebanyak 9.6%, kandungan abu (ash) sebanyak 7.6% dan nisbah ME Kcal/% protein (calorie:protein)= 150. Sedangkan kandungan bahan makanan CF adalah 20% protein, 4% lemak, 8% abu, 11% air dan 150% ME Kcal/% protein. Kedua-dua makanan adalah isokalorik dan telah mempunyai beberapa nisbah kalori-protein yang sama.

Analisa varians (ANOVA) telah digunakan untuk menganggar diantara strain, pemakanan dan strain x pemakanan. Program SPSS digunakan untuk analisis statistik.

Hasil penyelidikan ini telah menunjukkan UF lebih baik dibandingkan dengan CF, dalam peringkat berat badan dan kónformasi, purata berat badan telah diperolehi sebanyak $92.85 \pm 4.86g$ terhadap *O.niloticus* local dan sebanyak $72.94 \pm 1.84g$ terhadap *O.mossambicus* pada umur 32 minggu. Dengan CF, *O.niloticus* philippines telah diperolehi seberat $69.82 \pm 1.08g$ dan $45.35 \pm 5.34g$ terhadap *O.mossambicus*. Pengambilan makanan dan penukaran makanan terhadap ke tiga jenis strain yang digunakan ini adalah didapati bahwa UF adalah lebih baik dibandingkan dengan CF.

Pencapaian pertumbuhan dari ketiga-tiga jenis (*O.niloticus* local, *O.niloticus* philippines dan *O.mossambicus*) selama 32 minggu telah memperlihatkan bahwa dua jenis *O.niloticus* lebih baik dibandingkan dengan *O.mossambicus* dalam pengambilan makanan UF dan juga dengan CF.

Interaksi kesan pemakanan x strain adalah signifikan dalam berat badan, berat konformasi sifat dan pengambilan makanan tetapi tidak terhadap penukaran makanan. Perbedaan yang ditunjukkan itu adalah nyata. Jenis *Nilotica* lebih baik dibandingkan dengan *Mossambica*.

Komposisi ikan ditentukan secara berasingan untuk yang jantan dan yang betina, dari ketiga-tiga strain tilapia ini dan keputusan yang diperolehi menunjukkan strain *O.niloticus* lebih baik dibandingkan dengan strain *O.mossambicus* bagi hampir kesemua sifat-sifat ikan/karkas.